CLAIMS:

1. An isolated nucleic acid molecule comprising a sequence of nucloetides encoding or complementary to a sequence encoding a molecule or derivative or homolog thereof wherein said nucleic acid molecule is expressed in a larger amount in hypothalamus tissue of obese animals compared to lean animals or in fasted animals compared to fed animals wherein the nucleic acid molecule is selected from:

(i) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 1 or a nucleotide sequence having at least 40% identity thereto or a nucleotide sequence capable of hybridizing to SEQ ID NO: 1 or its complementary form under low stringency conditions;

(ii) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 2 or a nucleotide sequence having at least 40% identity thereto or a nucleotide sequence capable of hybridizing to SEQ ID NO: 2 or its complementary form under low stringency conditions;

(iii) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 3 or a nucleotide sequence having at least 40% identity thereto or a nucleotide sequence capable of hybridizing to SEQ ID NO: 3 or its complementary form under low stringency conditions;

(iv) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 4 or a nucleotide sequence having at least 40% identity thereto or a nucleotide sequence capable of hybridizing to SEQ ID NO: 4 or its complementary form under low stringency conditions;

(v) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 5 or a nucleotide sequence having at least 40% identity thereto or a

nucleotide sequence capable of hybridizing to SEQ ID NO: 5 or its complementary form under low stringency conditions;

(vi) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 6 or a nucleotide sequence having at least 40% identity thereto or a nucleotide sequence capable of hybridizing to SEQ ID NO: 6 or its complementary form under low stringency conditions;

(vii) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 7 or a nucleotide sequence having at least 40% identity thereto or a nucleotide sequence capable of hybridizing to SEQ ID NO: 7 or its complementary form under low stringency conditions;

(viii) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 8 or a nucleotide sequence having at least 40% identity thereto or a nucleotide sequence capable of hybridizing to SEQ ID NO: 8 or its complementary form under low stringency conditions; and

(ix) a nucleic acid molecule comprises a nucleotide sequence as set forth in SEQ ID NO: 9 or a nucleotide sequence having at least 40% identity thereto or a nucleotide sequence capable of hybridizing to SEQ ID NO: 9 or its complementary form under low stringency conditions.

2. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 1.

3. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 2.

4. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 3.

5. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 4.

6. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 5.

7. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 6.

8. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 7.

9. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 8.

10. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO: 9.

11. An isolated molecule comprising a sequence of nucleotides or amino acids encoded by a nucleic acid molecule which is expressed in a larger amount in hypothalamus tissue of obese animals compared to lean animals or in fasted animals compared to fed animals wherein the isolated molecule is encoded by a nucleic acid molecule selected from:

(i) a nucleic acid molecule as set forth in SEQ ID NO: 1 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 1 or a nucleotide sequence capable of hybridizing to SEQ ID NO: 1 or its complementary form under low stringency conditions;

(ii) a nucleic acid molecule as set forth in SEQ ID NO: 2 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 2 or a

nucleotide sequence capable of hybridizing to SEQ ID NO: 2 or its complementary form under low stringency conditions;

(iii) a nucleic acid molecule as set forth in SEQ ID NO: 3 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 3 or a nucleotide sequence capable of hybridizing to SEQ ID NO: 3 or its complementary form under low stringency conditions;

(iv) a nucleic acid molecule as set forth in SEQ ID NO: 4 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 4 or a nucleotide sequence capable of hybridizing to SEQ ID NO: 4 or its complementary form under low stringency conditions;

(v) a nucleic acid molecule as set forth in SEQ ID NO: 5 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 5 or a nucleotide sequence capable of hybridizing to SEQ ID NO: 5 or its complementary form under low stringency conditions;

(vi) a nucleic acid molecule as set forth in SEQ ID NO: 6 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 6 or a nucleotide sequence capable of hybridizing to SEQ ID NO: 6 or its complementary form under low stringency conditions;

(vii) a nucleic acid molecule as set forth in SEQ ID NO: 7 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 7 or a nucleotide sequence capable of hybridizing to SEQ ID NO: 7 or its complementary form under low stringency conditions;

(viii) a nucleic acid molecule as set forth in SEQ ID NO: 8 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 8 or a

nucleotide sequence capable of hybridizing to SEQ ID NO: 8 or its complementary form under low stringency conditions; and

(ix) a nucleic acid molecule as set forth in SEQ ID NO: 9 or a nucleotide sequence having at least about 40% identity to SEQ ID NO: 9 or a nucleotide sequence capable of hybridizing to SEQ ID NO: 9 or its complementary form under low stringency conditions.

12. The isolated molecule of Claim 11 wherein the molecule is a protein.

13. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 1.

14. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 2.

15. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 3.

16. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 4.

17. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 5.

18. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 6.

19. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 7.

20. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 8.

21. The isolated protein of Claim 12 encoded by a nucleotide sequence set forth in SEQ ID NO: 9.

22. An isolated protein selected from the list consisting of:-

(i) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 1 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(ii) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 2 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(iii) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 3 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(iv) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 4 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(v) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 5 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(vi) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 6 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(vii) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 7 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(viii) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 8 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(ix) a protein encoded by a nucleotide sequence substantially as set forth in SEQ ID NO: 9 or a derivative, homolog or analog thereof or a sequence encoding an amino acid sequence having at least about 40% similarity to this sequence or a derivative, homolog, analog, chemical equivalent or mimetic of said protein;

(x) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 1 or a derivative, homolog or analog thereof under low stringency conditions;

(xi) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 2 or a derivative, homolog or analog thereof under low stringency conditions;

(xii) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 3 or a derivative, homolog or analog thereof under low stringency conditions;

(xiii) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 4 or a derivative, homolog or analog thereof under low stringency conditions;

(xiv) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 5 or a derivative, homolog or analog thereof under low stringency conditions;

(xv) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 6 or a derivative, homolog or analog thereof under low stringency conditions;

(xvi) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 7 or a derivative, homolog or analog thereof under low stringency conditions;

(xvii) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 8 or a derivative, homolog or analog thereof under low stringency conditions; and

(xviii) a protein encoded by a nucleic acid molecule capable of hybridizing to the nucleotide sequence as set forth in SEQ ID NO: 9 or a derivative, homolog or analog thereof under low stringency conditions.

23. A method for modulating expression of one or more of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 in a mammal, said method comprising contacting of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 with an effective amount of a modulator of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 expression for a time and under conditions sufficient to up-regulate or down-regulate or otherwise modulate expression of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710.

24. A method of modulating activity of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 in a mammal, said method comprising administering to said mammal a modulating effective amount of a molecule for a time and under conditions sufficient to increase or decrease of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 activity.

25. A method of treating a mammal suffering from a condition characterized by one or more symptoms or *inter alia* a myopathy, obesity, anorexia, weight maintenance, diabetes, disorders associated with mitochondrial dysfunction, genetic disorders, cancer impaired muscle development, heart disease, inflammation, disorders associated with the immune system, infertility, disease associated with the brain, and metabolic energy levels, said method comprising administering to said mammal an effective amount of an agent for a time and under conditions sufficient to modulate the expression of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 or sufficient to modulate the activity of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710.

26. A method of treating a mammal suffering from a disease condition characterized by one or more symptoms of *inter alia* a myopathy, obesity, anorexia, weight maintenance, diabetes, disorders associated with mitochondrial dysfunction, genetic disorders, heart disease, inflammation, disorders associated with the immune system, infertility, disease associated with the brain, and/or metabolic energy levels, said method comprising administering to said mammal an effective amount of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 and/or AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710.

27. Use of an agent capable of modulating the expression AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 or a derivative, homolog or analog thereof in the manufacture of a medicament for the treatment of a condition characterized by *inter alia* a myopathy, obesity, anorexia, weight maintenance, diabetes, disorders associated with mitochondrial dysfunction, genetic disorders, heart disease, inflammation, disorders associated with the immune system, infertility, disease associated with the brain and/or metabolic energy levels.

28. Use of a agent capable of modulating the activity AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 or a derivative, homolog, analog, chemical equivalent or mimetic thereof in the manufacture of a medicament for the treatment of a condition characterized by *inter alia* a myopathy, obesity, anorexia, weight maintenance, diabetes, disorders associated with mitochondrial dysfunction, genetic disorders, cancer impaired muscle development, heart disease, inflammation, disorders associated with the immune system, infertility, disease associated with the brain and metabolic energy levels.

29. Use of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 or derivative, homolog or analog thereof AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 or derivative, homolog, analog, chemical equivalent or mimetic thereof in the manufacture of

a medicament for the treatment of a condition characterized by *inter alia* a myopathy, obesity, anorexia, weight maintenance, diabetes, disorders associated with mitochondrial dysfunction, genetic disorders, cancer impaired muscle development, heart disease, inflammation, disorders associated with the immune system, infertility, disease associated with the brain and metabolic energy levels.

30. A composition comprising a modulator of AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 expression AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 activity and one or more pharmaceutically acceptable carriers and/or diluents.

31. A method for detecting AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 or a derivative or homolog thereof in a biological sample from a subject, said method comprising contacting said biological sample with an antibody specific for AGT-701, AGT-702, AGT-704, AGT-705, AGT-706, AGT-707, AGT-708, AGT-709 and/or AGT-710 or their antigenic derivatives or homologs for a time and under conditions sufficient for a complex to form, and then detecting said complex.